What is claimed is:

1. An optical modulator comprising:

a semi-insulating semiconductor substrate with a principal plane partially including an exposed surface;

an optical waveguide ridge which is disposed on said semiconductor substrate and which includes a first clad layer of a first conductivity type, an optical-absorption layer, and a second clad layer of a second conductivity type, said optical waveguide ridge further having a side with a flat portion extending uniformly from a top of the ridge to said semiconductor substrate, the flat portion being in contact with the exposed surface of said semiconductor substrate;

a dielectric film which covers said optical waveguide ridge and said semiconductor substrate and which has a first opening made at the top of said optical waveguide ridge and a second opening made in a region of said semiconductor substrate other than the exposed surface;

a first electrode disposed on said dielectric film and mounted through said first opening on the top of said optical waveguide ridge, said first electrode further extending on the flat portion of said optical waveguide ridge while in close contact with a surface of said dielectric film, said first electrode further having one end thereof established on said semiconductor substrate through the exposed surface thereof; and

a second electrode disposed on said semiconductor substrate and connected to the first clad layer through the second opening of said dielectric film.

2. An optical modulator according to claim 1, wherein said semiconductor substrate has exposed surfaces on both sides of said

optical waveguide ridge, wherein said optical waveguide ridge has the flat portion on both sides thereof respectively and wherein said first electrode extends over both sides of said optical waveguide ridge, two ends of said first electrode being disposed respectively on the exposed surface of said semiconductor substrate.

3. An optical modulator according to claim 1, wherein the first clad layer further extends onto a region of said semiconductor substrate located outside said optical waveguide ridge and excluding the region where said first electrode is disposed.

4. An optical modulator according to claim 2, wherein the first clad layer further extends onto a region of said semiconductor substrate located outside said optical waveguide ridge and excluding the region where said first electrode is disposed.

5. An optical modulator according to claim 3, wherein said second electrode is disposed through said second opening on the extension of the first clad layer.

6. An optical modulator according to claim 4, wherein said second electrode is disposed through said second opening on the extension of the first clad layer.

7. An optical modulator according to claims 1, further comprising a dielectric located between said dielectric film and said first electrode and at a base of said optical waveguide ridge including a region where the flat portion of the ridge is in contact with the exposed surface of said semiconductor substrate.

8. An optical modulator according to claims 2, further comprising a dielectric located between said dielectric film and said first electrode and at a base of said optical waveguide ridge including a region where the flat portion of the ridge is in contact with the exposed surface of said semiconductor substrate.

9. An optical modulator according to claims 3, further comprising a dielectric located between said dielectric film and said first electrode and at a base of said optical waveguide ridge including a region where the flat portion of the ridge is in contact with the exposed surface of said semiconductor substrate.

10. An optical modulator according to claims 4, further comprising a dielectric located between said dielectric film and said first electrode and at a base of said optical waveguide ridge including a region where the flat portion of the ridge is in contact with the exposed surface of said semiconductor substrate.

11. An optical modulator according to claim 1, further comprising a conductive layer of said first conductivity type furnished over a part of said semiconductor substrate including a region under said optical waveguide ridge and excluding the region where said first electrode is provided, said second electrode being formed on said semiconductor layer through said second opening of said dielectric film.

12. An optical modulator according to claims 1, further comprising a high-resistance semiconductor layer located between one side of said optical waveguide ridge and said dielectric film, said high-resistance semiconductor layer being thinner than said optical waveguide ridge.

13. An optical modulator according to claims 2, further comprising a high-resistance semiconductor layer located between one side of said optical waveguide ridge and said dielectric film, said high-resistance semiconductor layer being thinner than said optical waveguide ridge.

14. An optical modulator according to claims 3, further comprising a high-resistance semiconductor layer located between one side of said optical waveguide ridge and said dielectric film, said high-resistance semiconductor layer being thinner than said optical waveguide ridge.

15. An optical modulator according to claims 4, further comprising a high-resistance semiconductor layer located between one side of said optical waveguide ridge and said dielectric film, said high-resistance semiconductor layer being thinner than said optical waveguide ridge.

16. A photonic semiconductor device comprising:

an optical modulator having;

a semi-insulating semiconductor substrate with a principal plane partially including an exposed surface,

an optical waveguide ridge which is disposed on said semiconductor substrate and which includes a first clad layer of a first conductivity type, an optical-absorption layer, and a second clad layer of a second conductivity type, said optical waveguide ridge further having a side with a flat portion extending uniformly from a top of the ridge to said semiconductor substrate, the flat portion being in

contact with the exposed surface of said semiconductor substrate,

a dielectric film which covers said optical waveguide ridge and said semiconductor substrate and which has a first opening made at the top of said optical waveguide ridge and a second opening made in a region of said semiconductor substrate other than the exposed surface,

a first electrode disposed on said dielectric film and mounted through said first opening on the top of said optical waveguide ridge, said first electrode further extending on the flat portion of said optical waveguide ridge while in close contact with a surface of said dielectric film, said first electrode further having one end thereof established on said semiconductor substrate through the exposed surface thereof, and

a second electrode disposed on said semiconductor substrate and connected to the first clad layer through the second opening of said dielectric; and

a semiconductor laser device aligned in optical axis with the optical absorption layer of said optical modulator.

17. A photonic semiconductor device according to claim 16, wherein said semiconductor laser device is a ridge type device having an optical waveguide ridge disposed on a semi-insulating semiconductor substrate, said semiconductor laser device and said optical modulator being mounted on the same substrate.

18. An optical modulator fabricating method including the steps of:

forming firstly a first clad layer of a first conductivity type, an optical absorption layer, and a second clad layer of a second conductivity type on a semi-insulating semiconductor substrate;

forming secondly by photolithograpy and etching an exposed surface of the semiconductor substrate as well as an optical waveguide ridge which has a side with a flat portion stretching uniformly from a top of the ridge to the semiconductor substrate, the flat portion being brought into contact with the exposed surface of the semiconductor substrate;

forming thirdly a dielectric film over the semiconductor substrate and a first and a second opening through the film, the first opening being made at the top of the optical waveguide ridge, the second opening being made in a region of the semiconductor substrate excluding the exposed surface thereof;

forming fourthly a first electrode through the first opening on the top of the optical waveguide ridge in such a manner that the first electrode extends on the flat portion of the optical waveguide ridge while in close contact with a surface of the dielectric film, the first electrode further having one end thereof formed on the semiconductor substrate through the exposed surface thereof; and

forming fifthly a second electrode connected to the first clad layer through the second opening of the dielectric film.

19. An optical modulator fabricating method according to claim 18, wherein the second step includes forming exposed surfaces of the semiconductor substrate on both sides of said optical waveguide ridge, as well as the flat portion respectively on both sides of the optical waveguide ridge, and wherein the fourth step includes causing the first electrode to extend over both sides of the optical waveguide ridge, and having two ends of

the first electrode formed respectively on exposed surfaces of the semiconductor substrate.

20. An optical modulator fabricating method according to claim 18, wherein said first step is preceded by the step of forming a conductive layer of said first conductivity type over part of the semi-insulating semiconductor substrate, wherein said second step includes forming an exposed surface of the conductive layer while forming the exposed surface of the semiconductor substrate, and wherein said fifth step includes forming the second electrode on the conductive layer through the second opening.